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COMPLETE SPECIFICATION

A Scale for the Rapid Determination of the Moisture Content in Solid Bodies

We, FRATELLI BÜHLER, an Italian Body Corporate organized under Italian Law, of Via Goldoni, 17, Milan, Italy, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to an apparatus for measuring the moisture content in solid bodies and particularly in cereals in general. The invention is concerned with apparatus of the kind in which a weighing device is positioned below a heating or drying chamber, with means on said weighing device passing upwardly into the drying chamber to lift the bodies being treated from their support and allow of their being weighed.

The apparatus of the present invention differs from those already known, in that, the various parts are contained in a single unit so as to ensure good operational conditions being maintained at all times. Thus the several conditions which are liable to produce error as, for example, varying room conditions such as varying temperature, humidity, and air currents, are eliminated.

The scale according to the present invention comprises a frame, a drying chamber having its bottom wall apertured and supported by said frame and provided with a vertical member passing through said bottom wall for supporting material to be weighed, and is characterized in that the said drying chamber is supported by said frame in a vertically slidable manner, means being provided for raising and lowering said drying chamber and in that a plate or like support is provided for the material which support freely rests in said drying chamber at a level which is higher than the upper end of said vertical member when the drying chamber is raised, and rests on said upper end when the drying chamber is lowered, and said vertical member being operatively connected to a weighing device.

The invention may be further characterised in that a second support for material is provided at the lower end of said vertical member, external to said drying chamber, on which moist materials may be weighed by the same weighing device when the upper support is raised out of engagement with said member by the raising of the drying chamber.

In one embodiment of the invention, illustrated by way of example in the accompanying drawing, the apparatus consists of a supporting tripod 1, provided with adjusting screws (not shown) for the true levelling of a central body 2 containing the weighing device, and a thermostatic drier 3 consisting of an insulated metal box provided with heating elements not shown for the sake of clarity.

In the base of the drier 3, three holes are provided for the passage therethrough of the trident end 4 of the rod 5. Above this trident end, is the plate 8^1 on which is placed the sample to be examined, the said plate becoming supported by the end 4 by suitably lowering the drier 3 by means of a suitable mechanism (not shown in the drawing). The lid of drier carries a vent 6 for the outlet of the steam generated from the sample during its "drying-up". The moisture percentage may be read from a suitably graduated dial 10, of the weighing device in the body 2.

The rod 5 has a knife-edge engagement with the yoke 7 of the weighing device 11, and it will be apparent that the said rod will support both, the lower plate 8 located within the tripod 1 and the upper plate 8^1 located in the drier 3, when the said drying chamber is lowered to cause the plate 8^1 to be lifted from its supports 9 by means of the trident end 4.

In use, a quantity of the untreated

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material is placed on the lower support 8, to counterbalance the weighted end of the scale member 11 with the pointer reading at zero on the scale. That material is then transferred to the upper support 8^1 and heated with the chamber 3 raised. After heating, the chamber 3 is raised, bringing the plate 8^1 on to the trident 4, and the loss of weight is then read on the scale 10.

When the apparatus is in operation, with the thermal drying chamber raised, that is, during the drying-up of the sample under examination, the same weighing means will allow a new weight measurement being made of the damp materials on the lower plate 8, thus making possible a continuous operation, which has not hitherto been possible with apparatus of this kind.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An apparatus for the rapid determination of the moisture content in solid bodies, comprising a drying chamber having its bottom wall apertured and supported by a frame and provided with a vertical member passing through said bottom wall for supporting material to be weighed, characterised in that the said drying chamber is supported by said frame in a vertically slidable manner, means being provided for raising and lowering said drying chamber, and in that a plate or like support is provided for the material which support freely rests in said drying chamber at a level which is higher than the upper end of the said vertical member when the drying chamber is raised, and rests on said upper end when the drying chamber is lowered, and said vertical member being operatively connected to a weighing device.

2. An apparatus according to Claim 1 characterised in that a second support for material is provided at the lower end of said vertical member, external to said drying chamber on which moist materials may be weighed by the same weighing device when the upper support is raised out of engagement with said member by the raising of the drying chamber.

3. An apparatus for the rapid determination of the moisture content in solid bodies constructed, arranged and adapted to operate substantially as herein described with reference to and as illustrated in the accompanying drawings.

Dated this 25th day of July, 1947.

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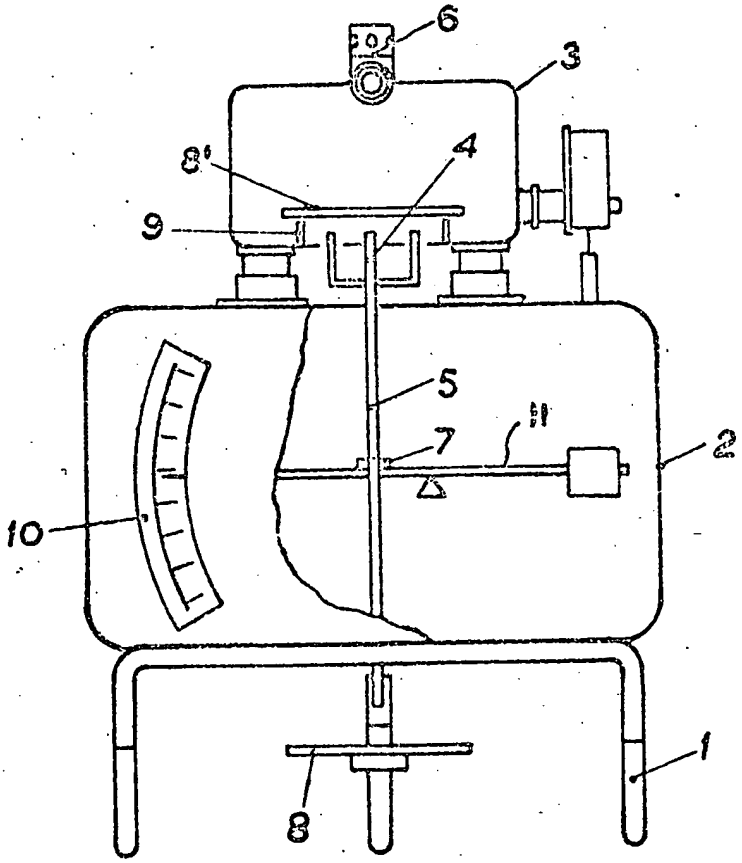
[This Drawing is a reproduction of the Original on a reduced scale.]



H.M.S.O.(1y.P.)